

## What is Claimed is:

- [c1] An image forming apparatus, comprising:
- a memory that stores a queue of jobs to be performed using the image forming apparatus;
  - at least one of at least one element containing material consumed by the image forming apparatus in performing the jobs within the queue of jobs and at least one element having a useful life consumed by the image forming apparatus in performing the jobs within the queue of jobs;
  - a controller that determines, for each of at least one job, that is in the job queue or is to be added to the job queue, and for at least one consumable within the image forming apparatus, if that job can be performed based on an unallocated amount of a remaining amount of that consumable, wherein the controller generates an alert notification if that job can not be completed in view of the unallocated amount of that consumable; and
  - a notification device that conveys an alert notification generated by the controller to a user.
- [c2] The apparatus of claim 1, further comprising:
- at least one sensor, the at least one sensor determining, for at least one element of the image forming apparatus, a remaining amount of a consumable associated with that element.
- [c3] The apparatus of claim 1, wherein, for each of the at least one job and for each of the at least one consumable, the controller estimates an amount needed of that consumable for that job.
- [c4] The apparatus of claim 3, wherein for each of the at least one consumable, the controller allocates an estimated amount of that consumable to that job.
- [c5] The apparatus of claim 3, wherein the controller estimates the amount needed of the consumable for that job on a page by page basis.
- [c6] The apparatus of claim 1, wherein the notification device is at least one of an alert icon, alert message, flashing light or audible noise.
- [c7] The apparatus of claim 1, wherein, for each job for which the controller has

generated an alert notification, the controller prevents the printing of that job.

[c8] The apparatus of claim 7, wherein the notification device indicates at least one of a customer replaceable unit that will need replacing to complete the associated job, that a supply of toner will be inadequate to complete the associated job, and a supply of sheets of a recording medium will need replenishing to complete the associated job.

[c9] The apparatus of claim 1, wherein the controller allows at least one of a promotion and a demotion of a job in the job queue.

[c10] A method for operating an image forming apparatus having a queue of jobs to be performed using the image forming apparatus and at least one of at least one element containing material consumed by the image forming apparatus in performing the jobs within the queue of jobs and at least one element having a useful life consumed by the image forming apparatus in performing the jobs within the queue of jobs, the method comprising:

determining, for at least one of the at least one element of the image forming apparatus, a remaining amount of a consumable associated with that element;

determining, for at least one job, that is in the job queue or is to be added to the job queue, and for at least one consumable within the image forming apparatus, if that job can be performed based on an unallocated amount of a remaining amount of that consumable;

generating, for at least one consumable, an alert notification if that job can not be completed in view of the unallocated amount of that consumable; and

conveying the alert notification to a user.

[c11] The method of claim 10, further comprising estimating, for each of the at least one job and for each of the at least one consumable, an amount needed of that consumable for that job.

[c12] The method of claim 11, further comprising allocating, for each of the at least one job and for each of the at least one consumable, the estimated amount of

that consumable for that job to that job.

- [c13] The method of claim 11, wherein estimating the amount needed for that job comprises estimating the amount needed of that consumable for that job on a page by page basis.
- [c14] The method of claim 11, wherein estimating the amount needed for that job comprises determining an average amount of that consumable used in past image forming operations.
- [c15] The method of claim 14, wherein determining the average amount of that consumable further comprises:  
determining an average amount of that consumable used for a page in past image forming operations.
- [c16] The method of claim 15, wherein estimating the amount needed for that job further comprises:  
determining an approximate number of pages of that job; and  
multiplying the average per page amount by the approximate number of pages of that job.
- [c17] The method of claim 11, wherein estimating the amount needed comprises:  
setting a total amount needed of that consumable to zero;  
selecting in turn each page of that job;  
determining an amount needed of selected consumable for the selected page;  
adding the determined amount needed to a total amount needed; and  
multiplying the total amount needed by a number of copies to obtain the estimated amount needed.
- [c18] The method of claim 10, wherein generating the alert notification further comprises associating the alert notification with that job.
- [c19] The method of claim 10, wherein generating the notification alert comprises generating at least one of an alert icon, an alert message, a flashing light or an audible noise.

- [c20] The method of claim 10, further comprising preventing printing of a job if an alert notification has been associated with that job.
- [c21] The method of claim 20, further comprising promoting the at least one job in the job queue ahead of at least one other job in the job queue.
- [c22] The method of claim 20, further comprising demoting the at least one job in the job queue behind at least one other job in the job queue.
- [c23] A method for operating an image forming apparatus having a queue of jobs to be performed using the image forming apparatus and at least one of at least one element containing material consumed by the image forming apparatus in performing the jobs within the queue of jobs and at least one element having a useful life consumed by the image forming apparatus in performing the jobs within the queue of jobs, comprising:
- (a) selecting a job from the queue of jobs for promotion as a current job;
  - (b) determining a promotion location of the current job;
  - (c) determining, for at least one element of the image forming apparatus, a remaining amount of a consumable associated with that element;
  - (d) determining, for the selected job and for at least one consumable within the image forming apparatus, if the selected job can be performed based on an unallocated amount of the remaining amount of that consumable; and
  - (e) preventing promotion of the current job if the current job cannot be performed based on the unallocated amount of the remaining amount of that consumable.
- [c24] The method of claim 23, further comprising moving the current job to the promotion location of the current job can be performed based on the unallocated amount for each of the at least one consumable determined in step (d).
- [c25] The method of claim 24, further comprising demoting at least one other job between the promotion location and an old location of the current job upon moving the current job to the promotion location.

- [c26] The method of claim 25, further comprising: selecting one of the at least one demoted job as the current job;
- (f) determining, for the selected job and for at least one consumable within the image forming apparatus, if the selected job can be performed based on an unallocated amount of the remaining amount of that consumable for the current job;
  - (g) preventing promotion of the current job if the current job cannot be performed based on the unallocated amount of the remaining amount of that consumable; and
  - (h) conveying the alert notification to a user.

- [c27] The method of claim 26, further comprising repeating steps (f)–(h) for each demoted job in turn as the current job until all demoted jobs have been analyzed.